

### REMARKS/ARGUMENTS

Reconsideration is respectfully requested of the Final Office Action of March 25, 2008, relating to the above-identified application.

A one month extension of time and associated fee is filed herewith.

The claims in the case are: Claims 1, 2, 4, 6, and 8 to 14.

It is noted that the previous rejections under 35 U.S.C. § 102 have all been withdrawn.

The rejection of Claims 1 and 13 under 35 U.S.C. § 103(a) as unpatentable in view of *Hartmann, et al.*, (US 5,959,005) taken with *Menon, et al.*, (US 6,159,540) is traversed and reconsideration is respectfully requested.

*Hartmann*, assigned to the same assignee as the present application, describes a method to produce a surface modified, hydrophobic silanized, silica powder with specifically defined physico-chemical properties as shown in Claim 1 (col. 2, lines 38-60). There is only one surface modifying substance disclosed by *Hartmann* whereby the pyrogenically produced silica is surface modified and that is the substance known as HMDS (Hexamethyldisilazane). The surface-modified silica of *Hartmann* also can be structure-modified (destructured). The term "destructured silica" is understood in this art to refer to silica that has been subjected to mechanical action, such as a ball mill to alter the properties thereof.

*Hartmann* shows that the destructuring of the silica can be done by means of a vertical ball mill, see col. 2, line 19. The resulting product can be ground by an air jet mill in order to destroy the grit in the powder (see the example in col. 2, line 15-36).

The surface modified and destructured silica, according to the US 5,959,005 patent (*Hartmann*), is used as a filler in polymers like 2K-RTV silicone rubber (see the example in col. 2).

According to col. 1, line 54, the silica can be used as a free-flow agent.

*Hartmann* (US 5,959,005) uses HMDS (Hexamethyldisilazane) only and does not mention any other surface modifying agents of any kind.

According to the present invention, applicants' silica are surface modified with silanes having the formula  $(\text{RO})_3\text{SiC}_n\text{H}_{2n+1}$  or with silanes which will result in dimethylsilyl and/or monomethylsilyl groups attached to the surface of the silica. The silane I (hexadecyltrimethoxysilane) and silane II (octyltrimethoxysilane) are particularly preferred (see paras. [0030-0032] and the examples in Table 5).

In this application, silicas produced in accordance with the present invention are shown in Table 7 and their properties are shown in Table 8. The silicas listed in Table 7 have been surface treated with the dimethylsilyl group, a preferred member of the treating agents, and structure modified to produce destructured silicas (silicas 1 to 11).

Attention is invited to the test results shown in Tables 13, 14, 15 and 16. Table 13 compares a prior known silica AEROSIL™ R974 (produced by assignee) with examples 1-3 of the invention. The AEROSIL™ R974 is not structurally modified. The results demonstrate that

the silicas of the invention exhibit unexpectedly improved fluidisability of the fire extinguishing powder with which they was mixed; see paras. [0101-0102].

The tests reported in Tables 14-16 show the result that there is markedly reduced tendency to caking compared with the prior art when fire extinguishing powders are provided with the structure-modified silicas defined by applicants' claims herein; see pg. 33, last paragraph of the specification.

Additional test data demonstrating the unexpectedly better results obtained by using the silicas described in the present application is presented in example 2 (see para. [0107], and pgs. 34 to 37) which shows tests relating to pharmaceutical excipient mixtures.

The data on pg. 9, in Table 17 (paras. [0108-0109]), shows that the silicas according to the examples of the invention have a markedly smaller sieve residue and hence agglomerate content than the comparison products AEROSIL™ 200, AEROSIL™ R972 and AEROSIL™ R8200. The latter three are all prior known silicas produced by the assignee.

It is to be particularly noted that AEROSIL™ R8200 is the silica according to *Hartmann* (US 5,959,005) and the sieve residue is much larger; see Table 17.

The difference in behavior between the products of this invention and the products of *Hartmann* could not have been predicted. The improvements in fluidisability (Table 13), resistance to caking (Tables 14-16) and reduced resin residue (Table 17) are not foreshadowed by *Hartmann*. Nor would these improvements be apparent from the *Menon* patent.

The *Menon* patent is directed to a method of treating silica comprising:

a) reacting silica with tri- or difunctional organosilanes in an aqueous acid medium to provide a crude product containing organosilane capped silica and organosilicon impurities;

b) extracting the organosilicon impurities from the crude silica product with an organic liquid to provide a purified product consisting essentially of organosilane capped silica, and then

c) drying the so purified product to obtain a dry organosilane-capped silica.

Thus, *Menon* describes the need for purification when using di- or tri- functional silanes because of contamination; see col.4 lines 16 et seq. Indeed, the two silanes mentioned in the Final Action, on page 3, line 2; namely, DMDCS and MTCS are singled out by *Menon* as illustrating the problem of contamination. Then why would a person skilled in the art be lead to select one or both of these silanes when the reference teaches these drawbacks?

*Menon* is focused on obtaining a purified dry organo-capped silica and does not contain any teaching that the silicas of *Hartmann* could be improved by replacing HMDS with the silanes defined by the present claims.

The Final Action takes the position that the two citations are combinable because they are concerned with the same field of endeavor, namely silanized silica. Yet not all silanizing agents have been shown to be equivalent. More importantly, the silanizing agents of *Menon* have not been shown to be interchangeable with the HMDS of *Hartmann*. Neither is there any teaching in either reference that would lead a person skilled in the art to think of using the

silanizing agents of *Menon* in the compositions of *Hartmann* as a replacement for HMDS. No advantage or benefit is taught in the prior art that would lead a person skilled in the art to replace the HMDS with anything else. There is simply no case of *prima facie* obviousness established by the combination of references and therefore the rejection should be withdrawn.

The rejection of Claims 2 and 14 under 35 U.S.C. § 103 (a) in view of *Hartmann, et al.*, taken with *Menon* is traversed and reconsideration is respectfully requested. Claims 2 and 14 are method claims directed to the method of improving the flowability of pulverulent materials by adding applicants' treated metalloids, metallic oxides or treated silicas to the pulverulent materials. *Hartmann* and *Menon* have already been discussed and the remarks made above apply here as well.

*Menon* does not disclose any pulverulent material and contains nothing that would suggest how pulverulent materials can be improved in any way. Neither does the record establish the interchangeability of any of the silanes of *Menon* with the HMDS of *Hartmann*. The Final Action says that a person skilled in the art would have selected the silanes of *Menon* because they are economical and environmentally beneficial. Yet, there is no evidence that *Menon's* silanes are any more economical or beneficial than is HMDS. Hence, the Final Action fails to make out a case of *prima facie* obviousness for the subject matter of Claims 2 and 14. Therefore, applicants request that the rejection be withdrawn.

The rejection of Claims 4, 6, 8, 9, 11 and 12 under 35 U.S.C. § 103(a) in view of *Hartmann* taken with *Menon* is traversed and reconsideration is respectfully requested. Both

of these references are discussed above and the remarks apply here as well. The rejected claims are drawn to compositions containing pulverulent materials and the silanized metalloid, metal oxide or silanized silica. The Final Action takes the position that a person skilled in the art would be lead to employ the silanized silicas of *Menon* in the *Hartmann* compositions because the *Menon* silanes are economical and environmentally beneficial. However, there is no evidence on record that *Menon's* silanes are any **more** economical or beneficial than the HMDS of *Hartmann*. Hence, the motivation to make the interchange of *Menon's* silanes for HMDS is lacking. A person skilled in the art would have no reason to make the change in the absence of evidence that there would be some benefit or advantage in doing so. That evidence is lacking in the present record. Therefore, applicants respectfully submit that the combination of references fails to establish *prima facie* obviousness. Withdrawal of the rejection is requested.

The rejection of Claim 10 under 35 U.S.C. § 103(a) in view of *Hartmann* taken with *Menon* further in view of *Koehlert, et al.*, US 5,928,723, is traversed and reconsideration is respectfully requested. The two principal references have been fully discussed above and the remarks apply here as well.

*Koehlert* is relied on in the Final Action to show powdery materials. Powdery materials are well known and the industry is constantly trying to improve the flowability properties of such substances. Many different substances have been used in the past to accomplish this purpose and not all have resulted in success. *Koehlert* attempts to address the

problem by proposing an esterification process for the treatment of silicas. This reference adds little to the record herein because it does not even relate to silanes technology. Hence, a person skilled in the art and involved with silane modification of silicas would not even consider the *Koehlert* patent to be relevant. There is no suggestion in any of the references that powdery materials defined in Claim10 could be improved. The rejection fails to establish *prima facie* obviousness and the rejection should be withdrawn.

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Favorable action at the Examiner's earliest convenience is respectfully requested.

Respectfully submitted,

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